Travel Demand Model Fact Sheet

Identification

Model Name: Simpson County TDM Model Area: Simpson County, Kentucky

Purpose of Model: Originally built to test potential Northwest Bypass around Franklin, KY; also can be used for other alternative testing and potential air quality issues

Model Developer: Wilbur Smith Associates Mod. Software Used: TransCAD

Date Model Work Began: 02/2003 Date Finished: 03/2004

Model Years:	Base Yr:	Fut. Yr:	Interim Years:				
	2002	2025					

Technical Specifications

TAZs / # links: 257 Internal TAZs, 37 external stations, 1,612 links (including 359 centroid connectors)

Trip Rates: 14.1 trips / hh

Trip Generation Equations:

- HBW productions = Number of Households x (HBW trip rate) x (observed proportion of HBW trips)
- HBNW productions = Number of Households x (HBNW trip rate) x (observed proportion of HBNW trips)
- NHB productions = Number of Households x (NHB trip rate) x (observed proportion of NHB trips)
- HBW attractions = 1.7 trips/retail employee x Number of retail employees + 1.7 trips/non-retail employee x Number of non-retail employees
- HBNW attractions = 10.0 trips/retail employee x Number of retail employees + 0.5 trips/non-retail employee x Number of non-retail employees + 1.0 trip/household x Number of households
- NHB attractions = 2.0 trips/retail employee x Number of retail employees + 2.50 trips/non-retail employee Number of non-retail employees + 0.5 trips/household Number of households

EE Methodology:

1. Determine percent of E-E / E-I per external station (using KYSTM results and Pigman equations).
2. Determine distribution of E-E trips to various external stations (using National Cooperative Highway Research Program (NCHRP) Report 365).

BPR Equations Used:

The enhanced BPR curve was used, where alpha = 0.05 for signalized facilities and 0.20 for unsignalized facilites; beta = 10)

Assignment Methodology:

An user-equilirium procedure was used for this model, using the BPR parameters noted above. Each assignment was allowed a maximum of 20 iterations to converage.

Truck Model: limited E-E truck flows Mode Choice: N / A

Time of Day Modeling: Daily Model Running Time: 1 min Air Quality Component: Classes codes in network

Script / Batch File Description (How Developed?)

The model is run using the GISDK user interface originally developed by WSA for the Madisonville, KY model. The interface was developed using GISDK code and Visual Basic applications.

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Calibration/Validation

RMSE: 24.36% Screenline Summary - Y/N: N How Many: N / A

Methods Used for Calibration:

Centroid connector adjustments; E-E trip adjustments; speed adjustments on non-state routes

Urban / Rural Comparison:

Unusual Calibration Measures Taken (K-Factors; Matrix Estimation):

Nothing unusual

VMT Model / VMT KYTC Comparison:

The higher functionally classified rural routes were a bit higher than the HPMS values while the urban links were lower. Some of the difference may rest in the mileage included in the travel demand model compared to the sample mileage included in the HPMS reporting.

VMT Increase In Future Year:

An overall increase of 89% from the base year

Data Collection/Network Development

Special Counts - Y/N: Y How Many? 21 Where? County roads at the county border

SE Data: Base Data Source: Population/Employment Ratio: 0.51

Population / Households - 2000 - United States Census Bureau; Forecasted to Base Year of 2002 based 2002 Control Totals from the Kentucky State Data Center; local input was used to adjust TAZ values to relect 2002 control totals

Employment - 2002 - Dun & Bradstreet Employment Data

Future Estimate Source:

Population / Households - 2030 - Kentucky State Data Center; 2030 Employment - Percentage growth based on Woods & Poole Forecasts

Base Network Developed From?:

Line File - Office of Geographic Information: (http://ogi.ky.gov/data/trans/transdwnld.htm)
Attributes (http://transportation.ky.gov/planning/data/his_extracts/his_extracts.shtm)

Other Data (e.g. Origin-Destination): N / A

Other Networks: Scenarios / Alternative Networks: Various networks tested for KY 1008 Pre-Design Scoping Study

E + C: Build for 2025 using project committed with construction funding in the current Six Year Highway Plan